Researching Learning Disabilities

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Dysl**ə**xia

What is Dyslexia?

- Meaning specific learning disabilities in reading.
- It is often characterized by difficulties with accurate word recognition, decoding and spelling.
- It may cause problems with reading comprehension and slow down vocabulary growth.
- It may result in poor reading fluency and reading out loud.
- It is neurological and often genetic.
- It is not the result of poor instruction.
- With the proper support, almost all people with dyslexia can become good readers and writers.

As with other learning disabilities, dyslexia is a lifelong challenge that people are born with. This language processing disorder can hinder reading, writing, spelling and sometimes even speaking. Dyslexia is not a sign of poor intelligence or laziness. It is also not the result of impaired vision. Children and adults with dyslexia simply have a neurological disorder that causes their brains to process and interpret information differently.

What are the effects of Dyslexia?

Dyslexia can affect people differently. This depends, in part, upon the severity of the learning disability and the success of alternate learning methods. Some with dyslexia can have trouble with reading and spelling, while others struggle to write, or to tell left from right. Some children show few signs of difficulty with early reading and writing. But later on, they may have trouble with complex language skills, such as grammar, reading comprehension and more in-depth writing.

Dyslexia can also make it difficult for people to express themselves clearly. It can be hard for them to use vocabulary and to structure their thoughts during conversation. Others struggle to understand when people speak to them. This isn't due to hearing problems. Instead, it's from trouble processing verbal information. It becomes even harder with abstract thoughts and non-literal language, such as jokes and proverbs.

All of these effects can have a big impact on a person's self-image. Without help, children often get frustrated with learning. The stress of dealing with schoolwork often makes children with dyslexia lose the motivation to continue and overcome the hurdles they face.

How is Dyslexia diagnosed?

Trained professionals can identify dyslexia using a formal evaluation. This looks at a person's ability to understand and use spoken and written language. It looks at areas of strength and weakness in the skills that are needed for reading. It also takes into account many other factors. These include family history, intellect, educational background, and social environment.

What strategies can teachers use to help educate a student with Dyslexia?

1. Use a tape recorder.

Many problems with materials are related to reading disabilities. The tape recorder often is an excellent aid in overcoming this problem. Directions, stories, and specific lessons can be recorded on tape. The student can replay the tape to clarify understanding of directions or concepts. Also, to improve reading skills, the student can read the printed words silently as they are presented on tape.

2. Clarify or simplify written directions.

Some directions are written in paragraph form and contain many units of information. These can be overwhelming to some students. The teacher can help by underlining or highlighting the significant parts of the directions. Rewriting the directions is often helpful. For example:

Original directions:

> This exercise will show how well you can locate conjunctions. Read each sentence. Look for the conjunctions. When you locate a conjunction, find it in the list of conjunctions under each sentence. Then circle the number of your answer in the answer column.

Directions rewritten and simplified:

> Read each sentence and circle all conjunctions.

3. Present a small amount of work.

The teacher can tear pages from workbooks and materials to present small assignments to students who are anxious about the amount of work to be done. This technique prevents students from examining an entire workbook, text, or material and becoming discouraged by the amount of work. Also, the teacher can reduce the amount of work when it appears redundant. For example, the teacher can request the student to complete only odd-numbered problems or items with stars by them, or can provide responses to several items and ask the student to complete the rest. Finally, the teacher can divide a worksheet into sections and instruct the student to do a specific section. A worksheet is divided easily by drawing lines across it and writing go and stop within each section.

4. Block out extraneous stimuli.

If a student is easily distracted by visual stimuli on a full worksheet or page, a blank sheet of paper can be used to cover sections of the page not being worked on at the time. Also, line markers can be used to aid reading, and windows can be used to display individual math problems.

5. Highlight essential information.

If an adolescent can read a regular textbook but has difficulty finding the essential information, the teacher can mark this information with a highlighter.

6. Locate place in consumable material.

In consumable materials in which students progress sequentially (such as workbooks), the student can make a diagonal cut across the lower right-hand corner of the pages as they are completed. With all the completed pages cut, the student and teacher can readily locate the next page that needs to be corrected or completed.

7. Provide additional practice activities.

Some materials do not provide enough practice activities for students with learning problems to acquire mastery on selected skills. Teachers then must supplement the material with practice activities. Recommended practice exercises include instructional games, peer teaching activities, self-correcting materials, computer software programs, and additional worksheets.

8. Provide a glossary in content areas.

At the secondary level, the specific language of the content areas requires careful reading. Students often benefit from a glossary of content-related terms.

9. Develop reading guides.

A reading guide provides the student with a road map of what is written and features periodic questions to help him or her focus on relevant content. It helps the reader understand the main ideas and sort out the numerous details related to the main ideas. A reading guide can be developed paragraph-by-paragraph, page-by-page, or section-by-section.

Dysca1cu1ia

What is Dyscalculia?

Dyscalculia refers to a wide range of lifelong learning disabilities involving math. It describes people that have significant problems with numbers, but still have a normal or above normal IQ. There is no single type of math disability. Dyscalculia can vary from person to person. And, it can affect people differently at different stages of life. It seems that no dyscalculic has problems with math alone. They can also struggle with the ability to tell time, left/right orientation, rules in games and much more. There are multiple types of dyscalculia, and all types demand specific learning methods aimed at the specific problem. The two learning disorders dyscalculia and dyslexia each have a prevalence of about 5% among primary-school pupils, a fairly constant figure internationally.

These children often require extensive mental strain to carry out even simple arithmetic tasks. They count using their fingers as a visual aid far into the upper grades. Difficulties of this sort are categorized as automatisation difficulties. Also linguistic difficulties may be involved with dyscalculia. It may manifest as difficulties in understanding numbers as a concept. Although possibly being of high intelligence, a child may have only a limited understanding of either numbers or numerical symbols.

Another form of dyscalculia involves planning difficulties that lead to the child's failure to carry out computations effectively. The child is challenged when trying to follow a clear strategy in solving arithmetic problems, losing track of mental position among the fundamental mechanics of the mathematical problem, sticking to strategies that are dysfunctional, or giving up on strategies that are correct and becoming passive.

Dyscalculia may also be based on problems with visual perception that lead to difficulties with tasks involving logical thinking as well as while carrying out computations. This is often encountered in children who have difficulties with learning to read an ordinary clock and understanding how the position of the hands is to be interpreted.

What are the effects of Dyscalculia?

Disabilities involving math vary greatly. So, the effects they have on a person's development can vary just as much. For instance, a person who has trouble processing language will face different challenges in math than a person who has trouble with visual-spatial relationships. Another person may have trouble remembering facts and keeping a sequence of steps in order. This person will have yet a different set of math-related challenges to overcome.

For individuals with visual-spatial troubles, it may be hard to visualize patterns or different parts of a math problem. Language processing problems can make it hard for a person to get a grasp of the vocabulary of math. Without the proper vocabulary and a clear understanding of what the words represent, it is difficult to build on math knowledge.

When basic math facts are not mastered earlier, teens and adults with dyscalculia may have trouble moving on to more advanced math applications. These require that a person be able to follow multi-step procedures and be able to identify critical information needed to solve equations and more complex problems.

How is Dyscalculia diagnosed?

Because experts cannot yet identify dyscalculia based on brain function, they have to diagnose it based on its effect, i.e. difficulty with math. This is difficult because there are many reasons for being bad at math. Reasons other than dyscalculia include inadequate instruction, lack of motivation, attentional disorders, anxiety disorders, or across the board academic difficulties. For this reason, most methods of diagnosis simply include the identification of the difficulty in math in which affects both academic and everyday life.

Research has already led to the development of Brian Butterworth's Dyscalculia Screener, designed specifically for use in schools to detect dyscalculia

What strategies can teachers use to help educate a student with Dyscalculia?

Children with Dyscalculia need extra help with mathematics as early as possible. Ideally this is best done by a specialist, either a special education teacher or other qualified therapist.

However, due to the lack of resources to assist learning disabled children, many teachers may find themselves trying to give some remediation. There are many different approaches to this. Often, the best approach for a child will be a mixture of techniques. It is a good idea is to identify the areas where the child has difficulty, and choose an intervention targeted at those areas.

Having at least one teacher guidebook is highly recommended. There are excellent books by Brian Butterworth and Dorian Yeo, "Dyscalculia Guidance" and "Dyscalculia: Action Plans for Successful Learning in Mathematics" by Glynis Hannell which are based on a combination of the latest research and years of experience in special education, and contains detailed suggestions as well as practical worksheets.

In the US there are a lot of books on teaching math to learning-disabled children. These books tend not to be targeted to dyscalculia but rather any type of learning disability, so generally offer more general advice. One classic is "Teaching Mathematics to Students with Learning Disabilities" by Nancy S. Bley & Carol Thornton.

Some general pointers in these novels include:

- Focus on understanding (especially of quantity)
- Use concrete materials to help link mathematical symbols to quantity
- Start at a level which the child is comfortable at, so that they experience some success, and slowly move to more difficult areas
- Provide a lot of practice for new skills/concepts
- Reduce the need for memorization, especially initially
- Ask many questions to get the child engaged
- Make learning as active and fun as possible - a positive experience

One thing to be avoided is spending too much time on drilling arithmetic facts. Where this is done, try to use an entertaining method such as a computer or card games. While facts are important for math, drilling alone will not help with the rest of the difficulties and can be a very frustrating experience for dyscalculic children. It is important to prioritize; in this day and age, calculators can make up for memorization. There are many people who do not have arithmetic facts well memorized, but are still perfectly good at math.

Dysgraphia

What is Dysgraphia?

Dysgraphia is a neurological disorder characterized by writing disabilities. It can be described as having difficulty with spelling, poor handwriting and trouble putting thoughts on paper. Specifically, the disorder causes a person's writing to be distorted or incorrect. In children, it generally emerges when they are first introduced to writing. They make inappropriately sized and spaced letters, or write wrong or misspelled words, despite thorough instruction.

Because writing requires a complex set of motor and information processing skills, saying a student has dysgraphia is not sufficient. A student with disorders in written expression will benefit from specific accommodations in the learning environment, as well as additional practice learning the skills required to be an accomplished writer. Children with the disorder may have other learning disabilities; however, they usually have no social or other academic problems.

What are the effects of Dysgraphia?

For children with dysgraphia, handwriting is an extremely cumbersome and energy-draining activity. Their dysgraphia significantly impedes their ability to express ideas in written form. Written expression requires generation and organization of ideas, language formulation, and attention to mechanics (spelling, capitalization, punctuation). If handwriting is not highly automatic, the effort required to produce written output is completely overwhelming. Written content is sparse with minimal elaboration of ideas, and written expression is significantly disparate from oral expression. Writing mechanics are also poor. Written work takes significantly more time than it does for the average student. Children with dysgraphia may begin to hate written assignments, and avoid or fail to complete written work.

- Appropriate pencil grip – The traditional pencil grip is a “tripod” grip, with the thumb and first 2 fingers. Many children with dysgraphia have an abnormal pencil grip. Sometimes the thumb crosses over and is used for control, a “fist” is used, or the pencil is gripped too tightly, in a “death grip”, making it a struggle for the child to write.
- Fine-Motor and Visual-Motor skills – Handwriting requires solid fine-motor skills and visual-motor integration. Preschool activities such as cutting, copying, and drawing can help develop the fine-motor and visual-motor skills needed for handwriting.
- Visual memory – Handwriting requires visual memory for letter and number patterns. Children with poor visual memory forget letter patterns, and can have difficulty copying from the board.
- Spatial skills – Signs of spatial weaknesses are letters that do not all “sit on the line”, inconsistent letter sizing, letters that slant in different directions, “drifting” paragraph margins, and inconsistent spacing between letters and words.
- Sequencing – Each written alphabet letter is a pattern that is executed in a specific sequence. Children with weak sequencing skills have difficulty memorizing these patterns, and letter formation is inconsistent.
- Directionality – Directionality weaknesses result in confusion between similar letters and numbers. The most commonly confused letters are b-d (left-right directionality). Some children also confuse p-b (up-down directionality).

How is Dysgraphia diagnosed?

Comprehensive psychological and educational evaluations can assist in the diagnosis of Dysgraphia. Diagnostic writing tests can be used to determine if the learner's writing skills are normal for his age. They can also provide information on his writing processing. Through observations, analyzing student work, cognitive assessment, and occupational therapy evaluations, educators can develop comprehensive, individualized treatment plans. Among the tests often included in an evaluation for dysgraphia are:

- An IQ test
- Academic assessment that includes reading, arithmetic, writing, and language tests
- Measures of fine motor skills related to writing
- Writing samples evaluated for spelling, grammar, and punctuation as well as the quality of ideas presented
- Tests that involve copying designs.

According to the International Dyslexia Association, children who are twice exceptional — gifted and dysgraphic — are especially under-diagnosed and underserved because teachers mistakably assume that if a student is bright and cannot write it is because the student is not trying.

What strategies can teachers use to help educate a student with Dysgraphia?

It is critical that students do not totally avoid the process of writing, no matter how severe their dysgraphia. Writing is an important life skill necessary for signing documents, filling out forms, writing checks, taking telephone messages or writing a grocery list. Therefore, students need to be able to write, even if they cannot maintain writing for long periods of time.

Young students should receive remediation in letter form, automaticity, and fluency. They need specific multisensory techniques that encourage them to verbalize the motor sequences of the form of letters (for example, b is *big stick down, circle away from my body*). Students should also use large air writing to develop a more efficient motor memory for the sequence of steps necessary in making each letter. This is because air writing causes students to use many more muscles than they use when writing with a pencil. Multisensory techniques should be utilized for teaching both manuscript and cursive writing. The techniques need to be practiced substantially so that the letters are fairly automatic before the student is asked to use these skills to communicate ideas.

Some students may be able to copy and write single sentences with a fair degree of ease, but they struggle tremendously with paragraph writing. These students will need to be taught techniques that enable them to perform each subpart prior to pulling together all the parts. Substantial modeling will be necessary at each stage for the student to be successful.

Possibly one of the most successful ways to keep a student engaged in the material is to encourage creativity. Just because a student is limited in his or her writing abilities doesn’t mean they are creatively challenged. Encouraging creativity in all students is essential for great teaching. It is also most important in students who suffer from Dysgraphia. Implementing creative techniques in teaching methods will provide an incredibly faster progress rate as well as a much higher outcome in the end.

D Y S P R A X I A

What is Dyspraxia?

Individuals with dyspraxia often have language problems, and sometimes a degree of difficulty with thought and perception. Dyspraxia, however, does not affect the person's intelligence, although it can cause learning problems in children.

Developmental dyspraxia is an immaturity of the organization of movement. The brain does not process information in a way that allows for a full transmission of neural messages. A person with dyspraxia finds it difficult to plan what to do, and how to do it.

Experts say that about 10% of people have some degree of dyspraxia, while approximately 2% have it severely. Four out of every 5 children with evident dyspraxia are boys. If the average classroom has 30 children, there is probably one child with dyspraxia in almost each classroom.

What are the effects of Dyspraxia?

A person with dyspraxia has problems with movement, coordination, judgment, processing, memory and some other cognitive skills. Dyspraxia also affects the body's immune and nervous systems.

According to the National Center for Learning Disabilities, individuals with dyspraxia have difficulties in planning and completing fine motor tasks. This can range from simple motor movements, such as waving goodbye, to more complex ones like brushing one's teeth.

Individuals with dyspraxia may be extremely sensitive to taste, light, touch and/or noise.

There may also be a lack of awareness of potential dangers. Many experience moods swings and display erratic behavior.

Researchers at the University of Bolton in England say that there is often a tendency to take things literally "(the child) may listen but not understand."

How is Dyspraxia diagnosed?

Symptoms are apparent in only about ten per cent of the population and two per cent may show severe symptoms. There is no cure for dyspraxia but an early diagnosis and therapy means greater chances of improvement. Diagnosis is usually done by a team of specialists. This includes a pediatrician or a children’s doctor, a physiotherapist, an occupational therapist and clinical and educational psychologist. There may also be a neurodevelopmental pediatrician or a pediatric neurologist on the team. These pediatricians specialize in central nervous system development of children. Progress of the child in school has to be assessed with the help of five areas of learning. These include:

- Development on personal, social and emotional levels
- Physical development
- Communication and language
- Problem solving, reasoning and numeral understanding
- Knowledge and understanding of the world around

Initial assessment involves detailed account of the child's developmental history which asks questions on when the child first sat, crawled etc. The next step of the assessment involves evaluating intellectual development. Reading, writing and other skills are tested. Motor skills are assessed. These look at gross movements like hopping, jumping, running, walking, throwing and keeping balance. There are tests that look at finer motor skills. These include looking at fine coordinated movements like writing, tracing, copying, cutting out shapes, buttoning, buckling etc.

There some common diagnostic tools that are used for diagnosis in the United Kingdom and United States. These include some of the following tests:

- Movement Assessment Battery for Children (Movement ABC-2)
- Test of Visual-Perceptual Skills (non-motor) (TVPS)
- Developmental Test of Visual-Motor Integration (VMI)
- Test of Auditory-Perceptual Skills Revised (TAPS-R)

What strategies can teachers use to help educate students with Dyspraxia?

- Put the child near the front of the class. If this is not possible, walking around the room can also bring the information to the student effectively.
- Speak instructions slowly and repeat if necessary—the shorter, the better. It is often necessary that the student write the instructions down. In addition, it is helpful to break instructions and materials into manageable "chunks."
- Acknowledge and praise tasks completed correctly. Positive reinforcement is extremely effective with dyspraxic children.
- Allow extra time for assignments. Processing speed is much slower for children with dyspraxia.
- When possible, if the student is required to copy from a board at the front of the room, allow the student to copy from a written handout instead.
- Organization is one of the biggest challenges for these children. If the student has all assignments and homework in one folder, it greatly reduces the risk of losing them.
- For younger students, assist with fine motor tasks. Cutting, coloring, and writing are very challenging and stressful. Encourage stabilization of the hand when writing.
- Lined and graph paper really help the student organize spatially.
- Allow "body breaks" throughout the day. Stepping outside of class to do push-ups against the wall, jumping, pressing the hands together, or even running a short errand enables the student to return to class more focused. Similarly, if the student feels a meltdown approaching, allow him or her to leave the room until the feeling passes. This can be prompted with a simple cue (e.g., raising hand).
- Encourage good posture whenever possible by having the child sit with hips and knees at 90° and feet flat on floor.
- One of the unique characteristics of dyspraxia is that a perfect day can be derailed with one slight mishap. For example, getting a blue crayon instead of a yellow one can cause a meltdown.
- Feedback helps to manage dyspraxia better. If the child has had difficulty with certain tasks, playground interactions, poor judgment, or managing emotions, sharing that information with the teacher can actually be very helpful!

Dys[phasia]

What is Dysphasia?

Approximately one million Americans currently suffer from one of the various forms of dysphasia, and an additional 80,000 new cases occur annually. The term "dysphasia" is more frequently used by European health professionals, whereas in North American the term, aphasia is more commonly preferred. These two terms, however, can be and are used interchangeably. They both refer to the full or partial loss of verbal communication skills due to damage or degeneration of the brain's language centers.

Verbal communication is derived from several regions located in the language-dominant hemisphere of the brain. These include the adjacent inferior parietal lobe, infer lateral lobe, and poster superior temporal lobe, as well as the subcortical connection between these areas. Disease, direct trauma, lesion, or infarction involving one or more of these regions can disrupt or prevent proper language function. Dysphasia does not necessarily prevent proper cognitive function, so the patient can think and feel with perfect clarity. This can be extremely frustrating for the patient, as they cannot express these thoughts and feelings to others.

Dysphasia can occur in a variety of forms, depending on how the communicative disruption manifests. Classically, dysphasia can affect one or more of the basic language functions: comprehension (understanding spoken language), naming (identifying items with words), repetition (repeating words or phrases), and speech. Although there are several subtypes of dysphasia, they most commonly manifest in one of three syndromes: expressive dysphasia, receptive dysphasia, or global dysphasia.

What are the effects of Dysphasia?

Approximately 50% of the surveyed individuals had speech-language therapy for over a year. However, 72% are unable to work. Those who have re-entered the work force reported taking positions with minimal demands because of language limitations.

About 70% of those surveyed felt that people avoid contact with them because of difficulty with communication. In the words of one respondent, "We need to feel welcome to visit people and we do not. Even several family members make us feel as outsiders. We have no visitors...and lead very lonely lives."

Ninety percent of people with aphasia felt they were isolated. They said:

- "We found ourselves left out of things we'd enjoyed before."
- "I think I could have been spared a lot of unnecessary emotional strain had I had some kind of support system."
- "Clubs for patients and families would be a big help; we would not feel so isolated."
- "People, supposedly close friends, ignore my husband who is aphasic."

Few people with aphasia return to the lives they had before. Often they must learn to live with a permanent communication disorder and the resulting frustration.

How is Dysphasia diagnosed?

Dysphasia is frequently diagnosed while the patient is being treated for injury to the brain, be it from trauma or disease. The health professional, typically a neurologist, will conduct standard cognitive tests, including tests to determine whether the patient's language centers have been affected. If the patient exhibits signs of difficulty communicating, they will often be referred to a speech-language pathologist. In turn, the

pathologist will conduct a comprehensive examination of the patient's ability language and comprehension skills. This examination may begin with evaluating the patient's ability to repeat words and phrases, recognize and describe objects, and comprehend what is said to them. More extensive and standardized language-based tests may be required, including the Porch Index of Speech Ability and the Boston Diagnostic Aphasia Examination. Based on the result of the examinations, the health professional will be able to determine the type of dysphasia inflicting the patient. More extensive damage may require the use of computed tomography or magnetic resonance imaging for an effective diagnosis.

What strategies can teachers use to help educate students with Dysphasia?

Utilizing specific reading strategies for students with aphasia can be especially effective since the disorder impacts the ability to read, write, listen and speak. For this reason, understanding aphasia and its symptoms for the purpose of implementing targeted interventions should be a top priority for teachers of students who have been diagnosed with the disorder.

Learn everything you can about the student as a learner. Read their IEP and cumulative folder. Examine previous classroom and standardized assessments. Analyze previous writing samples. If possible, speak with teachers and other professionals who have worked with the student in the past. Administer learning inventories and interview the student to develop a profile of the student's strengths, deficits, needs and preferences as a learner.

When you are listening:

- Make sure you are looking at the person
- Allow the person plenty of time to speak
- Encourage the person to use gesture, such as hand movements or facial expressions.

When you are talking:

- Make sure the person can see your face easily
- Use simple language - avoid complicated words
- Allow the person plenty of time to understand what has been said
- Ask questions that require a yes/no or one word response
- Draw, write or gesture to add more meaning to your spoken words
- Slowly repeat instructions or key words if you are concerned the other person has not understood

General Tips:

1. Speak clearly, slowly and with appropriate tone. Do not sound condescending.
2. Simplify and rephrase messages – and use redundancy. Repeat information to be sure it is clear.
3. Do not shout. Saying something louder does not help the person with aphasia to understand the message better.
4. Use simple drawings or writing. Draw a picture, or write key words to supplement what you are saying.
5. Supplement your speech with gestures. Point to objects that will clarify the message – or act out what you are trying to say.
6. Keep similar topics together. Let the person know when the topic is changing.
7. Ask one question at a time.
8. Confirm comprehension before proceeding. Ask questions to be sure that the information was understood.
9. Encourage use of assistive devices. Encourage the individual to wear his/her glasses and/or hearing aid(s).

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